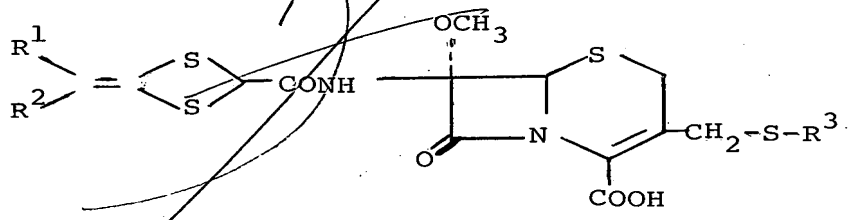
wherein R^1 represents a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, carbamoyl, ~~carbazolyl~~ carbazoyl, and cyano groups; R^2 represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group [(] wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2[)], a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower ~~ester~~ alkyl ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, carbamoyl, ~~carbazolyl~~ carbazoyl and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic residue; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group and the pharmaceutically acceptable salts thereof.

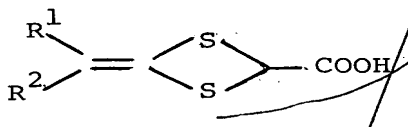
Claims 2, ~~3~~, 4, 5, 6 & 7, line 1: change "dithietan" to --dithietane-- (each occurrence, respectively).

8. (amended) A process for the preparation of 7$\overset{a}{\alpha}$-methoxy-7β-(4-substituted methylene-1,3-diethietane-2-yl)carboxamido-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the [general] formula

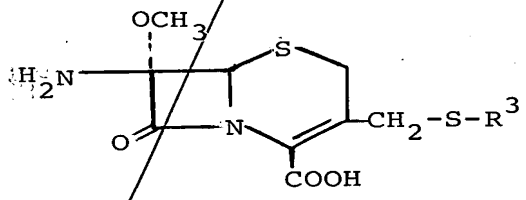


wherein R^1 represents a carboxyl group or the functional derivative residue thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, carbamoyl, ~~carbazolyl~~ carbazoyl, and cyano groups; R^2 represents a

hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group, and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, carbamoyl, ~~carbazolyl~~ carbazoyl and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic residue; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group [, R^2 and R^3 have the same significance as in claim 1], which comprises reacting the 4-substituted methylene-1,3-dithietane-2-carboxylic acid represented by the [general] formula

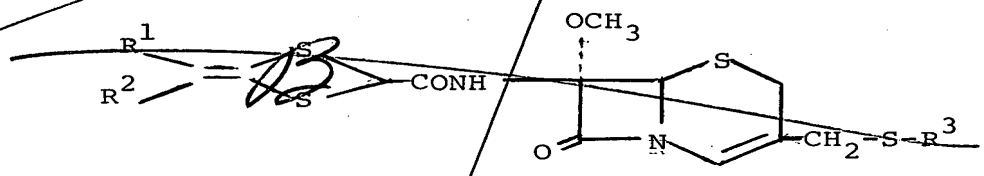


wherein R^1 and R^2 have the same significance as above, or the functional derivative thereof, with the 7α-amino-7β-methoxy-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the [general] formula

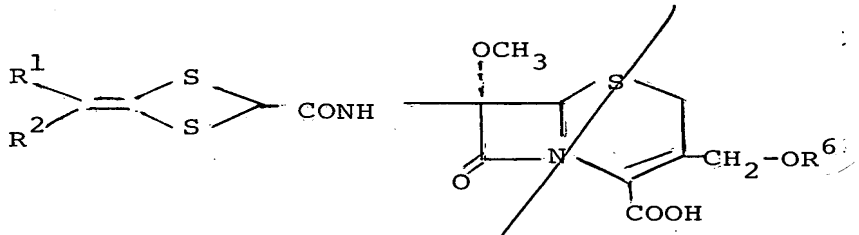


wherein R^3 has the same significance as above.

9. (amended) A process for the preparation of a 7α-methoxy-7β-(4-substituted methylene-1,3-dithietane-2-yl)carboxamido-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the [general] formula



wherein R^1 represents a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester residue, carbamoyl, ~~carbazolyl~~ carbazole, and cyano groups; R^2 represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, a carbamoyl, ~~carbazolyl~~ carbazole and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic ~~residue~~ radical; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group [, R^2 and R^3 have the same significance as in claim 1], which comprises reacting the 3-acetoxymethyl- (or 3-carbamoyl-oxymethyl-) 7α-methoxy-7β-(4-substituted methylene-1,3-dithietane-2-yl)carboxamido-Δ^3-cephem-4-carboxylic acid represented by the [general] formula

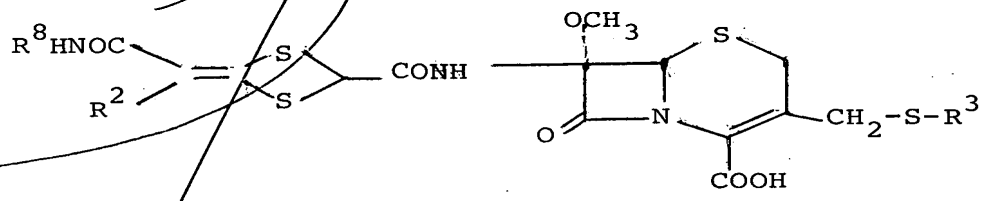


wherein R^1 and R^2 have the same significance as above and R^6 represents an acetyl group or a carbamoyl group, with the heterocyclic thiol represented by the ~~general~~ formula

$$HS - R^3$$

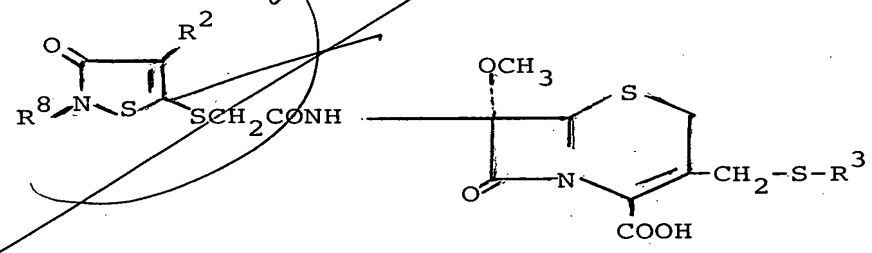
wherein R^3 has the same significance as above.

10. (amended) A process for the preparation of 7$\overline{a}$-methoxy-7β-(4-substituted methylene-1,3-dithietane-2-yl)carboxamido-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the [general] formula



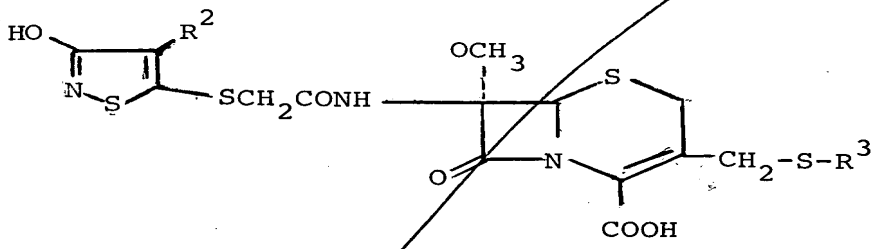
wherein R^2 [and R^3 have the same significance as in claim 1] represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, carbamoyl, ~~carbazoyl~~ carbazolyl and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic ~~residue~~ radical; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group, and R^8 represents a hydrogen atom or a substituted or un-

substituted alkyl group, which comprises treating [under a basic condition] the 7α-methoxy-3-heterocyclic thiomethylcephalosporin derivative represented by the [general] formula



wherein R^2, R^3 and R^8 have the same significance as above, with a base.

11. (amended) A 7β-(3-Hydroxy-4-substituted isothiazol-5-yl)thioacetamido-7α-methoxy-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the [general] formula



wherein R^2 [and R^3 have the same significance as in claim 1.] represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative ~~residue~~ radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester ~~residue~~ radical, carboxylic acid aralkyl ester ~~residue~~ radical, carbamoyl, ~~carbazoyl~~ carbazoyl and cyano groups, a lower alkenyl group, a